

Redescription of *Lepthyphantes cultellifer* (Araneae: Linyphiidae), with the first description of the female

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Abstract — A linyphiid spider, *Lepthyphantes cultellifer* Schenkel 1936, collected from Xiaowutai Mountains, China, is redescribed and figured on the basis of both the sexes. Its female is reported for the first time.

Key words — Araneae, Linyphiidae, *Lepthyphantes*, taxonomy, China

Introduction

The linyphiid spider genus *Lepthyphantes* was established by Menge (1866), but it was Simon (1884) who designated *L. minutus* as the type species for the first time (Saaristo & Tanasevitch 1993). After nearly 150 years from the original description, *Lepthyphantes* has become a very large genus including 171 species (world spider catalog 2015), and a polyphyletic taxon (Saaristo & Tanasevitch 1996).

Lepthyphantes cultellifer was originally described by Schenkel (1936) from Gansu Province of northern China. Tanasevitch (1989) re-examined and illustrated this species on the basis of the type material, then Song, Zhu & Chen (1999) cited Tanasevitch's illustration in their book. Until now, the species was known only from its type location.

While studying the *Lepthyphantes* species collected from Xiaowutai Mountains, a National Natural Reserve in Hebei Province of northern China, we found two male and four female *Lepthyphantes* specimens in Shanjiankou Forest Station. We identified the male as *Lepthyphantes cultellifer* Schenkel 1936 on the basis of the redescription of the species by Tanasevitch (1989). The female specimens were collected from the same habitat, the dorsal pattern of abdomens are very similar to those of *L. cultellifer*, and the characters of epigynal structure conform to the genus *Lepthyphantes*. We therefore identified it as the female of *L. cultellifer*, and describe it here for the first time.

Materials and methods

All specimens are preserved in 75% alcohol and examined, drawn, and measured under a Nikon SMZ1500 stereomicroscope equipped with an Abbe drawing device. Photographs were taken using the Leica M205A stereomicroscope equipped with a DFC450 CCD. The epigyne was cleared in warm solution of potassium

hydroxide (KOH), transferred to 75% alcohol for drawing. All specimens studied are deposited in the Museum of Hebei University (MHBU), Baoding, China.

The following abbreviations are used: ALE, anterior lateral eye; AME, anterior median eye; AME–ALE, distance between AME and ALE; AME–AME, distance between AMEs; MOA, median ocular area; PLE, posterior lateral eye; PME, posterior median eye; PME–PLE, distance between PME and PLE; PME–PME, distance between PMEs.

All measurements given in the text are in millimeters. Carapace length was measured medially from the anterior margin to the rear margin of the carapace. Eye sizes were measured as the maximum diameter of the lens in dorsal or frontal view. MOA length was measured medially from the anterior margin to the rear margin of MOA. The leg measurements are given in the following sequence: total length (femur, patella, tibia, metatarsus, tarsus).

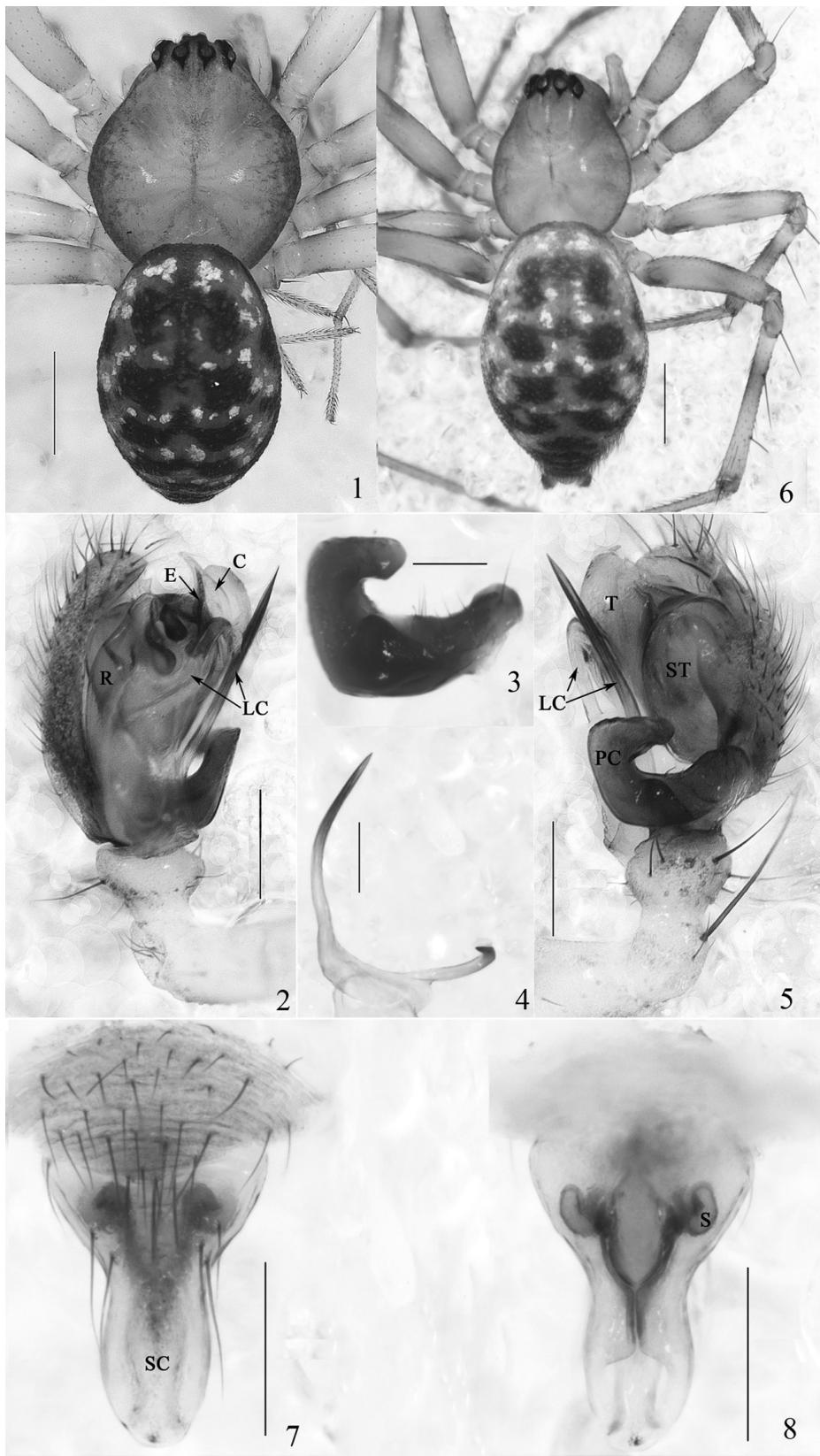
Taxonomy

Lepthyphantes cultellifer Schenkel 1936
(Figs. 1–12)

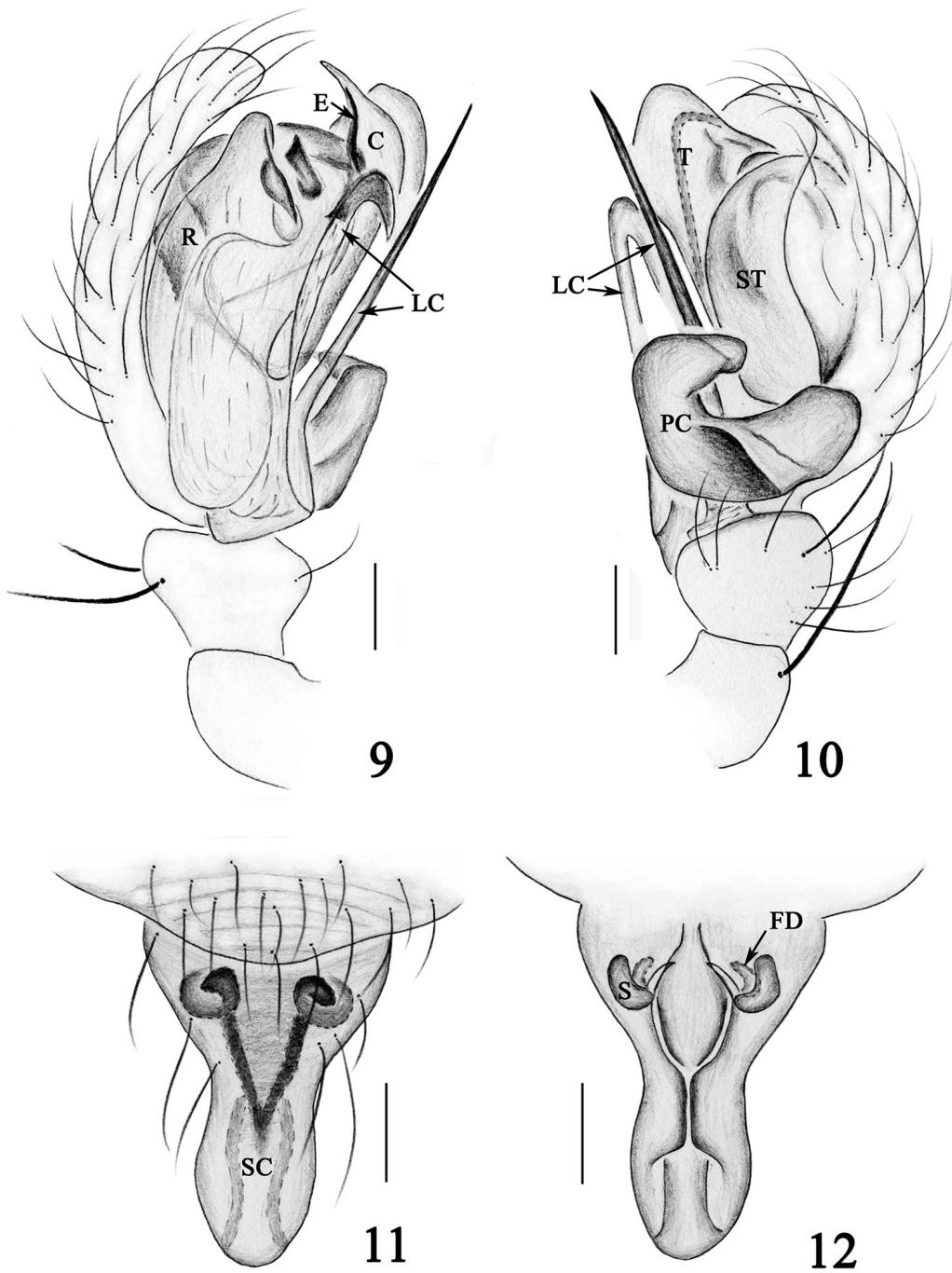
Lepthyphantes cultellifer Schenkel 1936: 62, fig. 20; Tanasevitch 1989: 171, fig. 223; Song, Zhu & Chen 1999: 181, fig. 101Q.

Type material. Holotype male, “Tan-Chang” (now known as Dangchang County), Gansu Province of China, September 28, 1930, collected by Dr. Hummel, deposited in the Naturhistoriska Riksmuseet, Stockholm (NRS), not examined, but Tanasevitch (1989) re-examined the holotype.

Materials examined. Shanjiankou Forest Station (39°34'N, 114°53'E), Xiaowutai Mountains, Zhuolu County, Hebei Province, China: 2 males (MHBU-Ar 20140135–20140136) and 2 females (MHBU-Ar 20140137–20140138), alt. 1380 m, 2 August 2014, G. X. Han leg; 1



Figs. 1–8. *Lepthyphantes cultellifer*. 1–5, male (MHBU-Ar 20140135). 1, habitus, dorsal view; 2, left palp, prolateral view; 3, paracymbium, retrolateral view; 4, lamella characteristicata, prolateral view; 5, left palp, retrolateral view. 6–8, female (MHBU-Ar 20140137). 6, habitus, dorsal view; 7, epigyne, ventral view; 8, vulva, dorsal view. Abbreviations: C, conductor; E, embolus; LC, lamella characteristicata; PC, paracymbium; R, radix; SC, scape; ST, subtegulum; T, tegulum. Scales=0.5 mm (1, 6); 0.2 mm (2, 4, 5, 7, 8); 0.1 mm (3).



Figs. 9–12. *Leptyphantes cultellifer*. 9–10, male (MHBU-Ar 20140135). 9, left male palp, prolateral view; 10, same, retrolateral view. 11–12, female (MHBU-Ar 20140137). 11, epigyne, ventral view; 12, vulva, dorsal view. Abbreviations: C, conductor; E, embolus; FD, fertilization duct; LC, lamella characteristic; PC, paracymbium; R, radix; S, spermathecae; SC, scape; ST, subtegulum; T, tegulum. Scales = 0.1 mm.

female (MHBU-Ar 20140139), alt. 1680 m, 1 August 2014, X. Liu leg; 1 female (MHBU-Ar 20140140), alt. 1300 m, 30 July 2014, D. Han leg.

Diagnosis. Male palp of the species is a little similar to *Leptyphantes alpinus* (Emerton 1882), both having very long and slender branches of lamella characteristic (Figs. 2, 4, 9), but it differs from the latter by: 1) palp without tibial apophysis in *L. cultellifer*, but with obvious tibial outgrowth

in *L. alpinus*; 2) paracymbium medially with slightly sclerotized in *L. cultellifer* (Figs. 3, 5, 10), whereas with two toothlike projections in *L. alpinus*; 3) palpal lamella characteristic in *L. cultellifer* is bifid (Figs. 2, 5, 9), while it divides into three branches in *L. alpinus*. Epigyne of female resembles *L. nodifer* Simon 1884, both having long scape of the epigyne (Figs. 7, 11), but can be easily distinguished by: 1) epigyne without stretcher, but with a small

stretcher in *L. nodifer*; 2) the vulval structure obviously different between the two species (Figs. 8, 12).

Description. *Male* (MHBU-Ar 20140135, Fig. 1). Body length 2.33. Carapace length 1.18, width 1.03; abdomen length 1.32, width 0.89. Clypeus height 0.19. Carapace yellow-grey. Eyes with black surroundings. Eye sizes and interdistances: ALE 0.07, PLE 0.06, AME 0.04, PME 0.06; AME-AME 0.04, AME-ALE 0.08, PME-PME 0.06, PME-PLE 0.07; MOA 0.20 long with front width 0.11 and back width 0.22. Chelicerae yellow-grey; fang groove with two relatively large pro-marginal teeth and four small retro-marginal teeth. Maxillae longer than wide, with pale outer margin which furnished with numerous bristles. Sternum black brown, strongly convex, heart-shaped. Measurements of legs: I 6.22 (1.69, 0.31, 1.62, 1.60, 1.00), II 5.39 (1.52, 0.30, 1.30, 1.44, 0.83), III 4.10 (1.24, 0.25, 1.00, 1.19, 0.42), IV 5.92 (1.61, 0.28, 1.53, 1.65, 0.85). Abdomen oval, with a dorsal pattern of grey dots, chevrons and bars against a dirty white background, interspersed with several silvery white spots.

Palp. Patella short, with a long bristle. Tibia short and widened distally, without apophysis. Cymbium simple, with the basal dorsal depression. Paracymbium (Figs. 3, 5, 10) well developed, broad and strongly curved, like “J”-shaped, medially with slightly sclerotized, oblique black region. Lamella characteristica (Figs. 2, 4, 9) emerging from the radix, bifid with two very long and slender branches, one straight and pointed, well-sclerotized, and the other bend to a perpendicular angle at the distal part. Embolus pointed.

Female (MHBU-Ar 20140137, Fig. 6). Body length 2.59. Carapace length 1.04, width 0.86; abdomen length 1.63, width 1.06. Clypeus height 0.17. Carapace yellow brown. Eyes with black surroundings. Eye sizes and interdistances: ALE 0.08, PLE 0.08, AME 0.05, PME 0.08; AME-AME 0.02, AME-ALE 0.05, PME-PME 0.04, PME-PLE 0.04; MOA 0.20 long with front width 0.12 and back width 0.21. Chelicerae yellow brown; fang groove with three large pro-marginal and four retro-marginal teeth. Maxillae longer than wide, with pale outer margin which furnished with numerous bristles. Sternum black brown, strongly convex, heart-shaped. Measurements of legs: I 4.65 (1.24, 0.32, 1.15, 1.17, 0.77), II 4.04 (1.13, 0.22, 0.99,

1.02, 0.68), III 3.47 (1.05, 0.25, 0.78, 0.88, 0.51), IV 4.57 (1.32, 0.28, 1.11, 1.15, 0.71). Abdomen oval, same as male.

Epigyne fairly prominent with a scape. The scape (ventral view, Figs. 7, 11) broad at the basal part with the looming kidney-shaped spermathecae, then greatly narrowed from the middle, the tip rounded. From the dorsal view (Figs. 8, 12), fertilization ducts originating on spermathecae, the median part of the scape folded from the two sides to the middle forming a slit-like space, and the distal portion forming a triangular depression, but the middle part well-sclerotized.

Distribution. China (Gansu and Hebei Province).

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